

Date: Fri, 14 Jan 94 22:28:41 PST  
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>  
Errors-To: Info-Hams-Errors@UCSD.Edu  
Reply-To: Info-Hams@UCSD.Edu  
Precedence: Bulk  
Subject: Info-Hams Digest V94 #38  
To: Info-Hams

Info-Hams Digest                      Fri, 14 Jan 94                      Volume 94 : Issue    38

Today's Topics:

                DIPOLLES FED BY LADDER LINE - Q  
                Land mobile mailing list?  
                Multi-User Dungeons on Packet?  
                Need Source for Gunn Diodes.  
                Never-ending search for FT-530 mods  
                ORBS\$014.2L.AMSAT  
                Packet to Internet  
                Portable 2m Antenna for Mountaineering???  
                Repeater database?  
                Repeater Interference  
                WANTED: Mods for ALL radios  
                why 29.94 fps?

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>  
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.  
-----

Date: Thu, 13 Jan 1994 08:42:58 -0500  
From: foxhound.dsto.gov.au!fang.dsto.gov.au!yoyo.aarnet.edu.au!  
news.adelaide.edu.au!basser.cs.su.oz.au!harbinger.cc.monash.edu.au!  
yeshua.marcam.com!news.kei.com!sol.ctr.@@munnnari.oz.au  
Subject: DIPOLLES FED BY LADDER LINE - Q  
To: info-hams@ucsd.edu

In article <CJJAEK.G1J@srngenprp.sr.hp.com>, alanb@sr.hp.com (Alan Bloom)  
wrote, in part:

>

> On the higher bands, the main difference with the 260-foot antenna would be  
> the radiation pattern. On 80 meters, the pattern would be a cloverleaf  
> (maximums at approx. 45-degree angle from the wire) instead of bi-directional  
> perpendicular to the wire. On 40-10 meters, the antenna would tend to be  
> more directional off the ends of the wire than with the 135-foot antenna.  
>

Don't forget that, to see the bidirectional pattern of a half-wave antenna, or the cloverleaf pattern of a pair of half-wave antennas fed at the center, you've got to be a \_significant\_ fraction of a wavelength above the ground. We're talking close to a half wavelength here, and that's about 125 feet on 80 meters, and about 250 feet on 160 meters. When I model antennas at realistic heights above real ground on A0-5 (less than a quarter wavelength on 80 and 160 meters), the radiation pattern looks like an \_egg\_ sitting on its broader end, with the narrower end pointing straight up. In the horizontal plane it's \_circular\_, not directional at all. (The classic cloud-burner.)

The real world doesn't look like all those pretty pictures in the textbooks.

--  
73 de John Taylor W3ZID  
rohvm1.mah48d@rohmmaas.com

-----  
Date: 13 Jan 1994 18:44:48 GMT  
From: usc!sol.ctr.columbia.edu!news.kei.com!ub!dsinc!netnews.upenn.edu!  
eniac.seas.upenn.edu!depolo@network.ucsd.edu  
Subject: Land mobile mailing list?  
To: info-hams@ucsd.edu

Does anyone have the subscription address for the land mobile mailing list?

--- Jeff

--  
-----  
Jeff DePolo WN3A Twisted Pair: (215) 337-7383H 387-3059W  
depolo@eniac.seas.upenn.edu RF: 443.800+ MHz 442.700+ MHz 24.150 GHz  
University of Pennsylvania  
-----

Date: 13 Jan 1994 15:32:21 GMT  
From: concert!inxs.concert.net!clapton.concert.net!dcc@decwrl.dec.com  
Subject: Multi-User Dungeons on Packet?

In article <swood.758436360@vela.acs.oakland.edu>,  
Scott Wood <swood@vela.acs.oakland.edu> wrote:

Don't need to hack, it already exists. Just find some DX Packet-Cluster software.

— —

-----

Pierre Catala - WA1UAT/5  
Dept. of Engr. Technology  
Texas A&M University  
catala@entc.tamu.edu

-----

Date: Thu, 13 Jan 1994 14:12:42 GMT  
From: netcomsv!netcom.com!wy1z@decwrl.dec.com  
Subject: Never-ending search for FT-530 mods  
To: info-hams@ucsd.edu

I'm on the neverending search for any mods for the Yaesu FT-530 HT.

I have the internal mod for expanded tx and rx, but is it all possible to do anything from the keypad?

Also, what else is there?

What is Yaesu hiding from us?

Thanks much.

Scott

--

```
=====
| Scott Ehrlich      Internet: wylz@neu.edu      BITNET: wylz@NUHUB  |
| Amateur Radio: wylz      AX.25: wylz@k1ugm.ma.usa.na      |
|-----|
| Maintainer of the Boston Amateur Radio Club hamradio FTP area on      |
| the World - world.std.com pub/hamradio      |
=====
```

-----

Date: 14 Jan 94 13:46:00 GMT  
From: news-mail-gateway@ucsd.edu  
Subject: ORBS\$014.2L.AMSAT  
To: info-hams@ucsd.edu

SB KEPS @ AMSAT \$ORBS-014.N  
2Line Orbital Elements 014.AMSAT

HR AMSAT ORBITAL ELEMENTS FOR AMATEUR SATELLITES IN NASA FORMAT  
FROM WA5QGD FORT WORTH,TX January 14, 1994  
BID: \$ORBS-014.N

DECODE 2-LINE ELSETS WITH THE FOLLOWING KEY:  
1 AAAAAU 00 0 0 BBBB.BBBBBBBB .CCCCCCC 00000-0 00000-0 0 DDDZ  
2 AAAAA EEE.EEEE FFF.FFFF GGGGGGG HHH.HHHH III.IIII JJ.JJJJJJJKKKKKZ  
KEY: A-CATALOGNUM B-EPOCHTIME C-DECAY D-ELSETNUM E-INCLINATION F-RAAN  
G-ECCENTRICITY H-ARGPERIGEE I-MNANOM J-MNMOTION K-ORBITNUM Z-CHECKSUM

TO ALL RADIO AMATEURS BT

AO-10  
1 14129U 83058B 94012.88782746 -.00000337 00000-0 10000-3 0 2527

2	14129	27.1999	346.8463	6020165	145.8302	274.3239	2.05879874	79582
U0-11								
1	14781U	84021B	94010.08597013	.000000380	00000-0	72457-4	0	6563
2	14781	97.7948	32.1580	0013012	56.2907	303.9538	14.69119704527098	
RS-10/11								
1	18129U	87054A	94012.18938195	.000000043	00000-0	30277-4	0	8534
2	18129	82.9265	84.1595	0012815	92.4751	267.7871	13.72329421328513	
A0-13								
1	19216U	88051B	94012.80728378	-.000000496	00000-0	10000-4	0	8646
2	19216	57.8771	273.8452	7205596	332.6950	3.3813	2.09726405	42750
F0-20								
1	20480U	90013C	94010.95413140	-.000000034	00000-0	50320-7	0	6518
2	20480	99.0159	192.6118	0541004	335.8403	21.8259	12.83223133183969	
A0-21								
1	21087U	91006A	94012.62069919	.000000094	00000-0	82657-4	0	4150
2	21087	82.9431	257.8282	0035513	155.4415	204.8441	13.74531504148215	
RS-12/13								
1	21089U	91007A	94003.81201797	.000000013	00000-0	-16601-5	0	6449
2	21089	82.9224	133.3515	0028470	204.2513	155.7306	13.74032105146079	
U0-14								
1	20437U	90005B	94010.77417742	.000000091	00000-0	52567-4	0	9554
2	20437	98.6020	97.6365	0010436	297.1869	62.8248	14.29816216207093	
A0-16								
1	20439U	90005D	94010.27599894	.000000090	00000-0	52081-4	0	7569
2	20439	98.6100	98.2182	0010807	299.7021	60.3085	14.29872172207037	
D0-17								
1	20440U	90005E	94010.24566329	.000000085	00000-0	49855-4	0	7553
2	20440	98.6104	98.4590	0010937	298.8420	61.1664	14.30010001207045	
W0-18								
1	20441U	90005F	94010.77802339	.000000076	00000-0	46420-4	0	7562
2	20441	98.6102	98.9976	0011564	297.9734	62.0277	14.29986901207120	
L0-19								
1	20442U	90005G	94010.27687465	.000000090	00000-0	52015-4	0	7551
2	20442	98.6110	98.7224	0011738	298.7184	61.2818	14.30080180207066	
U0-22								
1	21575U	91050B	94010.20521252	.000000086	00000-0	43783-4	0	4569
2	21575	98.4527	87.7827	0008506	45.5057	314.6824	14.36880739130394	
K0-23								
1	22077U	92052B	94010.71614680	-.000000037	00000-0	10000-3	0	3510
2	22077	66.0891	249.6865	0008292	327.4530	32.5976	12.86283043	66534
I0-26								
1	22826U	93061D	94010.74365142	.000000064	00000-0	44049-4	0	2544
2	22826	98.6708	88.0424	0008909	315.3567	44.6895	14.27703185	15226
A0-27								
1	22825U	93061C	94010.75128956	.000000091	00000-0	54921-4	0	2533
2	22825	98.6699	88.0360	0008369	315.3218	44.7287	14.27601262	15225
K0-25								
1	22830U	93061H	94010.22919834	.000000033	00000-0	30715-4	0	2557

2	22830	98.5723	86.4575	0010974	282.5588	77.4365	14.28026996	15156
NOAA-9								
1	15427U	84123A	94012.02966378	.00000111	00000-0	83070-4	0	6750
2	15427	99.0745	60.5237	0014518	302.8342	57.1432	14.13578753468283	
NOAA-10								
1	16969U	86073A	94012.05489049	.00000088	00000-0	55662-4	0	5743
2	16969	98.5117	25.8091	0014292	65.7755	294.4914	14.24856833380370	
MET-2/17								
1	18820U	88005A	94010.49966547	.00000056	00000-0	36696-4	0	2532
2	18820	82.5404	34.0252	0015326	265.7718	94.1693	13.84704489300534	
MET-3/2								
1	19336U	88064A	94010.21677031	.00000051	00000-0	10000-3	0	2554
2	19336	82.5411	75.4737	0015967	300.1181	59.8358	13.16963401262462	
NOAA-11								
1	19531U	88089A	94011.93062008	.00000138	00000-0	99115-4	0	4766
2	19531	99.1569	357.1352	0011172	210.6074	149.4447	14.12949121273153	
MET-2/18								
1	19851U	89018A	94010.22638494	.00000114	00000-0	88700-4	0	2549
2	19851	82.5234	269.8530	0013932	316.1413	43.8640	13.84355084245838	
MET-3/3								
1	20305U	89086A	94012.21817743	.00000044	00000-0	10000-3	0	9699
2	20305	82.5469	17.8121	0006413	326.0438	34.0268	13.04399384202568	
MET-2/19								
1	20670U	90057A	94010.36092796	.00000024	00000-0	79036-5	0	7558
2	20670	82.5461	333.8268	0014612	227.3560	132.6370	13.84186139178782	
FY-1/2								
1	20788U	90081A	94003.03844225	-.00000027	00000-0	10000-4	0	8621
2	20788	98.8453	28.3934	0015034	108.6050	249.2585	14.01339724170575	
MET-2/20								
1	20826U	90086A	94010.22431973	.00000087	00000-0	65344-4	0	7546
2	20826	82.5269	271.6566	0013720	125.9243	234.3192	13.83570021165910	
MET-3/4								
1	21232U	91030A	94010.23936452	.00000050	00000-0	10000-3	0	6627
2	21232	82.5496	281.2627	0011829	219.1707	140.8560	13.16459166130574	
NOAA-12								
1	21263U	91 32 A	94010.55261609	.00000178	00000-0	88514-4	0	8341
2	21263	98.6367	41.6836	0012890	338.0944	21.9680	14.22355318138129	
MET-3/5								
1	21655U	91056A	94010.09455474	.00000051	00000-0	10000-3	0	6584
2	21655	82.5580	228.3870	0012144	230.2532	129.7521	13.16826852115655	
MET-2/21								
1	22782U	93055A	94010.28911561	.00000060	00000-0	41889-4	0	2544
2	22782	82.5489	331.5590	0021925	312.2133	47.7166	13.82996559	18264
MIR								
1	16609U	86017A	94013.23246154	.000007501	00000-0	98220-4	0	931
2	16609	51.6178	244.1498	0005389	191.8997	168.1855	15.59710416451871	
HUBBLE								
1	20580U	90037B	94012.60564155	.00000841	00000-0	69070-4	0	4277

2 20580 28.4679 155.2431 0006043 261.7035 98.2865 14.90421224 6150  
GRO  
1 21225U 91027B 94011.88639997 .00004606 00000-0 10634-3 0 540  
2 21225 28.4618 236.3958 0003410 244.2475 115.7767 15.39803980 32819  
UARS  
1 21701U 91063B 94011.32398713 -.00003119 00000-0 -25223-3 0 4629  
2 21701 56.9840 67.6091 0005313 102.6819 257.3568 14.96361954127456  
POSAT  
1 22829U 93061G 94010.23145061 .00000090 00000-0 54208-4 0 2465  
2 22829 98.6671 87.5394 0009751 303.3262 56.6985 14.27996332 15156  
/EX

-----  
Date: 14 Jan 94 18:47:24 GMT  
From: ogicse!henson!henson.cc.wwwu.edu!n8117105@network.ucsd.edu  
Subject: Packet to Internet  
To: info-hams@ucsd.edu

My dad would like to be able to packet to Internet but has no access in any way at all as yet. Would some sympathetic Ham out there packet to him with info about packeting? I am very new to this and am trying to search out help for him....hope this is okay to do it here. His call is

KN6WB and his name is Frank Phillips, Redding, CA  
phone: (916)241-4403.

He is very eager to do this and would really appreciate a call.  
Thanks, Judy

-----  
Date: Thu, 13 Jan 94 17:35:49 GMT  
From: tijc02!eri316@uunet.uu.net  
Subject: Portable 2m Antenna for Mountaineering???  
To: info-hams@ucsd.edu

> I am an avid climber/backpacker etc and want to be able to use my HT in  
> the backcountry. I require a design for an antenna (with better gain  
> than my rubber duck) that is light, easily packable, and not too bulky,  
> which will allow me to work repeaters in the 2m band. In case it  
> matters, most (but not all) of the use will be from mountain tops.  
>

Well I'm not so avid, but I'd like to be. Make the roll-up J-pole.  
Around here, the mountain tops are where the repeaters ARE, so I  
look for a better signal from the bottom of the Gorge.

Hey maybe you could load up a variety of wired nuts and see if any might present a match???

--Ed

-----  
Date: Sat, 15 Jan 1994 04:30:38 GMT  
From: dog.ee.lbl.gov!agate!iat.holonet.net!bwilkins@network.ucsd.edu  
Subject: Repeater database?  
To: info-hams@ucsd.edu

jmaynard@nyx10.cs.du.edu (Jay Maynard) writes after my editing:  
: In article <2h6lmf\$zk4@inxs.concert.net>,  
: W. M Wood -- The Signal Group <mikewood@rock.concert.net> wrote after my editing:  
:  
: The simplest way to stay out of trouble is to follow the rules. Period. No  
: politics, no favoritism, no under-the-table deals. The last thing I want is  
: trouble, so I do all of those.  
:  
: >I do contour studies professionally as a communications system engineer..so  
: >yes I DO KNOW what is involved in doing a proper study. I also  
: >know that a decent one can be done in an hour or so with out  
: >a computer..just radial lines in a topo map. If you are just  
: >drawing 85 mile radius circles on a map you aren't really  
: >coordinating ...you are just OFFICIATING. If a job is worth  
: >doing it should be done right.

OK lets bring this out in the open. Where are you going to draw the line?  
Is your contour 39 db 45 db or 115 db as most amateurs would like to see.  
Does this line measure the transmitter or the receiver? Does your  
propagation model take into consideration diffraction and normal ducting  
conditions?

In California the applicant for coordination conducts the engineering studies or field trials on the air. The applicant must satisfy the coordinated stations. The coordinators monitor the test phase often making technical recommendations. There are test pairs or shared non protected channels to conduct these tests to minimise interference to the coordinated group working with them. Coordination is based on repeater receiver coverage area in northern california. Many times the coordinated trustee and the applicant agree that certain overlap areas can be shared.

Would you be willing to a close share with a paper engineered repeater on your local repeater?



: Why not volunteer to do it, then? Or is it simply easier to bitch?  
:  
: >YOU are already the volunteer. Why aren't you doing ANY kind of study?  
:  
: The 85-mile rule was found to fit the conditions of Texas very well. There  
: would not be any significant changes if we were to study repeaters  
: individually, but a massive proliferation of work.

Remember the rest of the world is not flat :)

: >Now to the meat of the matter ....the INFORMATION I am referring  
: >to is LAT/LON/HAAT/ERP for all the commercial stations mentioned.  
: >This thread is about WHY LAT/LON/HAAT/ERP info is being  
: >withheld by people/groups like you and yours. I am not asking  
: >or suggesting that engineering studies be released. JUST  
: >LAT/LON/HAAT/ERP.

This is not enough information to conduct a proper coverage contour for any transmitter. Consider the 100 watt station operating into a quarter-wave monopole with 100w erp will have a different coverage contour than a 10 watt station operating into a 10 db collinear antenna. Both have the same ERP. Each station will have different coverage models due to the patterns of the antenna. This is most noticeable in rolling or mountainous terrain. Sorry ... we are in the real world out here not a laboratory.

: As I've said: we got the information in confidence. The trustees would simply  
: not give it to us if we were to pass it out to every Tom, Dick, and Harry who  
: asked. We would be violating our confidence to release it. Do you break  
: promises and expect to have folks trust you again? This is exactly the issue  
: here.

Remember we are dealing with amateur radio service repeaters not common carriers that have different reporting requirements.

: Besides, you WERE demanding the engineering studies:  
:  
: >>>I dare ANY so called coordinating group to prove me wrong by PUBLISHING  
: >>>their engineering studies for all their "coordinated" repeaters.  
:  
: >If you are just drawing 85 mi. radius circles THEY DON'T EXIST TO  
: >ANY DEGREE.....  
:  
: By your standards, maybe not. The process happens to work, though, even  
: without your mountain of paperwork.  
:  
: >Well the hard cold reality is coordinating groups do not want  
: >to publish this information because they cannot justify the  
: >ARBITRARY AND POLITICAL manner in which they pass out frequencies

: >if the FACTS are publicly available.

The facts are available to any amateur with a mobile transiever. Do your study and field check your model using a simplex frequency or a test or snp pair. One should easily find the edge of any coordinated repeater as it relates to your proposal. Read your coordinating councils policy and procedures for coordination. Talk to other trustees. There are vary few secrets as radio waves seem to be consistant.

: >A final note : Until the FCC requires CTCSS (or similar) instead  
: >of carrier squelch on Amateur repeaters, this debate will  
: >continue forever. Carrier squelch repeaters are archaic and  
: >the root cause of many repeater interference problems.  
: >CTCSS is cheaper than DTMF to install/build in radios.  
: >Alternatively the ARRL and coordinators should make this  
: >part of the coordination scheme. Since there are no technical  
: >regulations regarding coordination it could be done.  
: >Again the problem is POLITICAL . EXISTING coordinated  
: >repeater owners and users don't want to be burdened  
: >by CTCSS on their repeaters and mobiles.....unless  
: >it's to keep out "strangers".

:  
: PL is something that the majority of hams could use today; nearly every radio  
: built in the last 10 years has a PL encoder built in. You're right in that  
: it's a political problem, but I don't see the problem you think it's a panacea  
: for. In particular, PL will not allow stacking repeaters closer together; that  
: would cause interference that most users, never mind trustees, would find  
: unacceptable.

:  
: It has been suggested that PL be a mandatory part of the coordination process  
: in Texas. The proposal was soundly defeated by the Society's membership. We  
: can't impose that requirement unilaterally, much as we can't impose other  
: things unilaterally. It's called "being responsive to the membership". Just in  
: case you've missed my mentioning it in other messages, membership is open to  
: any licensed amateur radio operator.

: --

: Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can  
: jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.  
: "A good flame is fuel to warm the soul." -- Karl Denninger

In northern california the coordinators requested all new repeaters use ctcss as a way of mitigating interference. This was almost universally done on 440. The 2meter coordinator finally brought the issue to the membership where a majority of voters made it a standard. Once users found out that ctcss was acceptable they demanded the repeater trustees install it in the repeater. No one wants to monitor a carrier squelch repeater thrashing all evening. The days of a high mountain carrier access repeater

are over. Many 2meter repeaters have taken on new life...they are a pleasure to monitor as you only hear the intended transmissions not some flying pager or distant amateur on an other repeater. Ctcss has enhanced the repeater and brought it back to life not closing or making it private.

Bob

--

Bob Wilkins n6fri                      voice 440.250+ 100pl san francisco bay area  
bwilkins@cave.org                      packet n6fri @ n6eeg.#nocal.ca.usa.na

-----

Date: Thu, 13 Jan 94 18:00:54 GMT  
From: tijc02!eri316@uunet.uu.net  
Subject: Repeater Interference  
To: info-hams@ucsd.edu

Recently ran across a instance which I'll share:

We've been suffering local repeater interference on a number of machines with inputs from 146.10 thru 146.4. I hooked up my trusty Poor Man's Spectrum Analyzer to my beam and found that sometimes when one of our local machines UNkeyed, up would pop a blip on that frequency which then drifted down the band. Sometimes a leisurely drift, sometimes an eye-popping zip.

Ideas? Repeaters, cavities, circulators, 500W pagers next door?

--Ed

-----

Date: Fri, 14 Jan 1994 23:52:07 GMT  
From: netcomsv!netcom.com!wy1z@decwrl.dec.com  
Subject: WANTED: Mods for ALL radios  
To: info-hams@ucsd.edu

I want to compile as complete a library of mods for every shortwave radio, ham radio, and scanner.

Once collected, they will each be placed into their respective locations according to manufacturer in the ham radio FTP area on world.std.com.

Any pointers to FTP, FSP, mailserver, World Wide Web, and Gopher sites, as well as whatever else you can offer would be greatly appreciated!

Thanks much!

Scott

--

```
=====
| Scott Ehrlich           Internet: wylz@neu.edu       BITNET: wylz@NUHUB   |
| Amateur Radio: wylz      AX.25: wylz@k1ugm.ma.usa.na |
|-----|
| Maintainer of the Boston Amateur Radio Club hamradio FTP area on |
| the World - world.std.com pub/hamradio                        |
=====
```

-----  
Date: Thu, 13 Jan 1994 16:22:17 GMT  
From: netcomsv!netcom.com!btoback@decwrl.dec.com  
Subject: why 29.94 fps?  
To: info-hams@ucsd.edu

In article <2gs9mk\$gd6@aur.ualcatel.com> powers@aur.ualcatel.com writes:  
>This requires a good ovenized oscillator(that isn't cheap). Rubidium Oscillators  
>go for about \$20,000 I think. Cesium Beam clocks are > \$200,000.

^^^^^^

^^^^^^

>The clocks that NIST uses are the best in the world. They have about 10 of them  
>that are all averaged together.

>

>WWV, however loses a lot in its method of transmission and to propagation effects.

>Received accuracy (if you have a stable enough PLL to track it without further  
>loss of accuracy) is about 1E-7 (0.1ppm) frequency accuracy and 1ms for timing.

>Even to keep this accuracy would cost you at least \$1000. Stratum 3 oscillators used in non-central office telephone equipment are 4.7ppm and cost at least \$2000.

The Hewlett-Packard Cesium Beam Standard is US\$46,000, plus \$5,000 for the clock display and standby battery (sheesh) and \$8,500 for the high-performance cesium beam tube (improves accuracy from +/- 3E-12 to +/- 2E-12, and improves short-term stability). I know this because, as a sufferer from compulsive time fetishism, it's on my shopping list for when I win the lottery. The 20ms accuracy of my Heathkit clock is OK for now, but I'd much rather KNOW what time it is than have WWV TELL me what time it is.

Their rubidium standard is US\$42,000, plus about \$10,000 in accessories that I couldn't live without. Its short-term stability is about 10 times better than the cesium beam standard ( $5e-13$  over 100s, as opposed to  $5e-12$  over 1s). It's just the thing for netting parties, so maybe this could be a club purchase.

Just for comparison, they also have a quartz frequency standard for \$9,500. Its short-term stability is about two orders of magnitude worse than that of the cesium beam standard, but of course its accuracy depends on the standard with which it's calibrated.

The quartz standard also claims very high spectral purity, saying that spectra less than 1 Hz wide can be obtained when the 5mHz output of the standard is multiplied to 10 GHz. Perhaps that poor New York repeater owner with the 243 MHz spur should consider one of these :-).

-- Bruce Toback  
Internet: btoback@netcom.com  
Packet: kn6mn@kc7y.az.usa.na

-----  
Date: 12 Jan 94 20:22:45 GMT  
From: sgigate.sgi.com!sgiblab!uhog.mit.edu!xn.ll.mit.edu!ll.mit.edu!  
wjc@rutgers.rutgers.edu  
To: info-hams@ucsd.edu

References <CJFF8p.56v@spk.hp.com>, <1994Jan11.144946.25480@brtph560.bnr.ca>,  
<1994Jan11.165851.23593@kodak.rdc.kodak.com>e.edu  
Subject : Re: BRAIN CANCER, LEUKEMIA FROM HAM RADIO

In article <1994Jan11.165851.23593@kodak.rdc.kodak.com>,  
ornitz@kodak.rdc.kodak.com (Barry x24904/ER/167B-TED) writes:

|>  
|> ...stuff deleted...  
|>  
|> This is a common misconception and one that needs to be corrected,  
|> especially in regard to a discussion on how radio waves interact with  
|> living cells.  
|>  
|> The lowest resonant absorption frequency for water (rotational  
|> spectra) is 22.235 GHz. Home microwave ovens in the United States  
|> operate at 2.45 GHz.  
|>  
|> ...stuff deleted...  
|>

I agree with Barry that the common microwave oven frequency of 2.45 GHz does not correspond to a resonance of the water molecule. I also agree that the lowest resonance for water is around 22 GHz.

However, that resonance is exhibited by \_gaseous water\_.

So far as I know, neither liquid water nor ice exhibit any RF rotational resonances, but I'm not certain.

By the way, the dielectric loss factor of pure, liquid water does show a peak at about 1 GHz at 0 Celsius, moving up to about 10 GHz at +20 Celsius. Sea water shows a rather constant loss factor over that frequency range (pretty much the same at 0 and +20 Celsius), increasing at lower frequencies and falling at higher frequencies. These are my recollections from data presented in an appendix to Volume 3 of \_Microwave Remote Sensing\_ by Ulaby et. al.

73

Bill Chiarchiaro N1CPK  
wjc@ll.mit.edu

-----  
End of Info-Hams Digest V94 #38  
\*\*\*\*\*  
\*\*\*\*\*